

PERMANENT MAGNET GENERATOR COOLING SYSTEM

ABSTRACT

A cooling system for a sealed permanent magnet generator is disclosed that has a rotor shaft that is hollow. Permanent magnets mount on the exterior of the hollow rotor shaft. The rotor shaft has a pressed aluminum tube in various configuration on the inside bore with an end-mounted fan. The aluminum tube acts as a heat sink to draw the heat generated by the magnets through the rotor shaft and aluminum tube. The fan draws cooling air through the hollow bore of the rotor shaft thus cooling the magnets and forces the heated air through passages on the exterior of the stator housing. Because the airflow is not in contact with the electrical portions of the generator the cooling system will perform in dusty, wet and explosive environments. In another configuration a refrigeration compressor installed in the rotor shaft bore cools the rotor shaft and the fan cools the stator passages.